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Investigation of the influence of the open cell foam models geometry on hydrodynamic calculation

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Abstract

© Published under licence by IOP Publishing Ltd. A geometrical model of the open cell foam was created as an ordered set of intersecting spheres. The proposed model closely describes a real porous cellular structure. The hydrodynamics flow was calculated on the basis of a simple model in the ANSYS Fluent software package. A pressure drop was determined, the value of which was compared with the experimental data of other authors. As a result of the conducted studies, we found that a porous structure with smoothed faces provides the smallest pressure drop with the same porosity of the package. Analysis of the calculated data demonstrated that the approximation of an elementary porous cell substantially distorts the flow field. This is undesirable in detailed modeling of the open cell foam.

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